The American Fertilizer

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...THE...

AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 92 MAY 25, 1940 No. 11

The 1940 Annual Convention

Fertilizer Executives to Meet at White Sulphur Springs for Sixteenth Annual Convention of The National Fertilizer Association. Outstanding Speakers to Address Gathering. Election of Directors.

PLANS have been completed for the Sixteenth Annual Convention of the National Fertilizer Association, which will be held at the Greenbrier, White Sulphur Springs, West Virginia on June 3rd, 4th and 5th. As was the case at the 1915 Convention, the effects of the European War is naturally uppermost in the minds of the industry, but the program which the officers have prepared deals with the constructive, rather than the destructive, elements of modern science. Fortunately the situation as regards fertilizer materials has improved during the past 25 years. The development of synthetic nitrates has relieved the tension on Chile as the principal source of nitrogen for munitions and thus assures an adequate supply of Chilean nitrate to supplement other domestic sources of nitrogenous materials. And the effect of the sudden stoppage of European potash in 1914 will not be repeated, due to the rapid growth of potash production in this country.

The convention program follows along the lines which have proved so satisfactory in past years. There will be two general sessions which will combine both the economic and the scientific departments of the fertilizer business. The addresses of the President and the Executive Secretary will cover the current business situation, while other speakers will deal with the advances in the technique of fertilizer manufacturing and selling. On the whole, the commercial side will be given more emphasis than usual.

At the first general session on Tuesday morning, June 4th, John E. Sanford, president of the Armour Fertilizer Works and president of the Association will preside. His presidential address will review the fertilizer situation and the developments of the past year in legislation, governmental competition, Association activities, etc. President Sanford, during his previous term as president of the Association, has demonstrated his ability to deal adequately with these complicated problems.

Following President Sanford will come the annual address by Charles J. Brand, Executive Secretary and Treasurer. Mr. Brand has chosen as his subject, "A Century of Plant Food Progress." Probably no one in the industry is better equipped to present the picture of an industry which has advanced so quickly from a business of by-products only, to one of the most advanced departments of the chemical world.

Two other talks are scheduled for the Tuesday meeting. Dr. Allen A. Stockdale, of the National Association of Manufacturers, will speak on "Business, Government and the Future." Fertilizer manufacturers have had many experiences with the competition of government with business, and anyone who is bold enough to predict the future of this trend is sure to have an interested audience. The first session will close with an address by Dr. W. H. Martin, Dean and Director of the New Jersey Agricultural Experiment Station. His topic, "Teamwork in Farm Research" is most timely, as the industry has been thoroughly sold on the value of accurate information as an indispensable adjunct to the permanent growth of fertilizer sales.

The meeting on Wednesday, June 5th, will open with a talk by Dr. J. W. Tidmore, Head of the Department of Agronomy at the Agricultural Experiment Station, Auburn, Alabama. He has selected as his subject, "Some Problems Involved in Raising Farm Income." As it has

been demonstrated that fertilizer sales and farm income rise and fall together, he could not have chosen a more timely topic.

The selling end of the industry is handled in the next address, "Over the Desk," by Charles P. Garvin, general manager of the National Stationers Association. Sales methods in the fertilizer business have always been the weak point and an outside point of view should be most welcome.

The closing talk will present a department of the Association which has always given valuable service without enjoying its proportionate share of the limelight. "How Our Traffic Work Saves the Farmer Money" will be demonstrated by D. A. Dashiell, manager of the Traffic Department of F. S. Royster Guano Company, and chairman of the Association's Traffic Committee. The reduction of excessive freight rates has meant thousands of dollars to the fertilizer manufacturer and has enabled him to give the farmer a better product at less cost.

Annual Dinner

The Thirteenth Annual Dinner of the Association will be held on Tuesday evening, June 4th at 8 o'clock. Attendance at this event is open to all those attending the Convention and it has always proved to be one of the outstanding items on the program. President Sanford will act as toastmaster. The address of the evening will be delivered by Dr. Harrison E. Howe, Editor of "Industrial and Engineering Chemistry "the publication of the American Chemical Society." Science and New Competition" will be the subject of his remarks. Through his contacts with the many branches of the A. C. S., Dr. Howe is one of the best informed men in the chemical field and the Association is fortunate in being able to secure his services for this occasion.

Hotel Rates

As in previous years, the Greenbrier is offering a special schedule of convention rates as follows:

Single room without bath, $9.00 per day per person.

Room sharing bath, $10.00 per day per person.

Single room with bath, $11.00 per day per person.

These rates are on the American Plan and include meals.

The Greenbrier management has granted the privilege of these rates not only for the convention dates but also for a short period before and after the convention. These rates apply to all those attending the Convention, whether members of the National Fertilizer Association or not.

Railroad Rates

Summer tourist rates to White Sulphur Springs will be in effect from practically all points in the United States. These rates in many cases will be substantially lower than the fares which are now in effect on all roads. Members should remind local ticket agents that this summer tourist rate is available.

In Central, Trunk Line, and New England territories the summer tourist tickets are on sale daily.

In Southeastern territory, tickets are on sale daily, good for 30 days after date of sale.

In Southwestern territory there is a 30-day limit on summer tourist tickets to White Sulphur Springs. In Western territory, 30-day excursion tickets to Chicago and St. Louis should be purchased, and summer tourist tickets from there to White Sulphur Springs. These 30-day excursion tickets may be purchased on the same basis as were the former 10-day excursions.

In Transcontinental territory, tickets are good three months, and diverse routes may be arranged.

Entertainment Features

A committee has been appointed to arrange for the entertainment of the ladies attending the Convention. This committee, consisting of Mrs. A. L. Ivey, Chairman; Mrs. Chester A. Fulton, Mrs. Western Logan and Mrs. James E. Totman, has planned a bridge party for one afternoon and a ladies' putting contest for another, with attractive prizes for these events. Each evening there will be dancing in the Ball Room, as well as moving pictures. The entertainment facilities at the Greenbrier also include riding, swimming, tennis, badminton and skeet.

Election of Directors

The convention will elect four directors-at-large. The present directors whose terms expire are A. L. Ivey, Virginia-Carolina Chemical Corporation, Richmond, Va.; H. Albert Smith, Smith Agricultural Chemical Co., Columbus, Ohio; Louis Ware, International Agricultural Corporation, New York City. A vacancy caused by the death of Arthur S. Key will also be filled.

President Sanford has appoined a nominating committee, headed by R. B. Douglass, Smith-Douglass Co., Norfolk, Va., to present

(Continued on page 26)

Sixteenth Annual Convention
of
THE NATIONAL FERTILIZER ASSOCIATION

Monday, June 3rd

10.00 A. M. Meeting of the Board of Directors.
9.00 P. M. Meeting of the Nominating Committee.

FIRST GENERAL SESSION

Tuesday, June 4th, 10 A. M.

President JOHN E. SANFORD in the Chair

Song: "America."

Invocation: Rev. Ben. R. Roller, St. Thomas' Episcopal Church, White Sulphur Springs, West Virginia.

Annual Convention Address: John E. Sanford, President, Armour Fertilizer Works, Atlanta, Ga., and President, The National Fertilizer Association.

Address: "A Century of Plant Food Progress," Charles J. Brand, Executive Secretary and Treasurer, The National Fertilizer Association, Washington, D. C.

Address: Business, Government, and the Future," Dr. Allen A. Stockdale, National Association of Manufacturers, New York, N. Y.

Address: "Teamwork in Farm Research," Dr. W. H. Martin, Dean and Director, Agricultural Experiment Station, New Brunswick, N. J.

Submittal of the Budget: John E. Sanford, Chairman, Budget Committee.

Report of Nominating Committee: Ralph B. Douglass, Vice-President, Smith-Douglass Co., Inc., Norfolk, Va., Chairman.

Tuesday Evening, June 4th, 8 P. M.

Thirteenth Annual Dinner of the Association: President John E. Sanford presiding.

Address: "Science and New Competition," Dr. Harrison E. Howe, Editor, Industrial and Engineering Chemistry, Washington, D. C.

SECOND GENERAL SESSION

Wednesday, June 5th, 10 A. M.

President JOHN E. SANFORD in the Chair

Address: "Some Problems Involved in Raising Farm Income," Dr. J. W. Tidmore, Head, Department of Agronomy, Agricultural Experiment Station, Auburn, Ala.

Address: "Over the Desk," Charles P. Garvin, General Manager, National Stationers Association, Washington, D. C.

Address: "How Our Traffic Work Saves the Farmer Money," D. A. Dashiell, Manager, Traffic Department, F. S. Royster Guano Co., Norfolk, Va., and Chairman, Traffic Committee, The National Fertilizer Association.

Unfinished Business.

New Business.

Memorial Record: J. S. Coale, President, I. P. Thomas & Son Co., Camden, N. J.

Adjournment.

The annual meeting of the New Board of Directors will be held immediately after adjournment of the convention for the purposes of organizing and transacting any business that may properly come before the Board.

A meeting of the new Soil Improvement Committee to elect officers for the coming year is planned immediately after the Board meeting.

Acid Production in Composts of Sulphur and Organic Matter

By G. H. GODFREY AND HERBERT RICH
Lower Rio Grande Valley Substation, Weslaco, Texas

MUCH work has been done with applications of sulphur to soils as a corrective for excess alkalinity, as a soil amendment for its actual fertilizing value, and as an inhibitor against certain soil-borne plant pathogens. This paper is a preliminary report on experimental work on the production of composts of sulphur with soil or organic matter. These composts have proven to be of value as mentioned above.

Mixtures were made with approximately equal parts by weight of finely ground sulphur and soil, of sulphur and the powdered dry waste from one of the Valley citrus-peel dehydration plants, and of sulphur with loose aged barnyard manure, in similar proportions. These mixtures were placed in outdoor pits about 3 by 4 feet and 3 feet deep on January 17, 1939, and uniformly but not excessively moistened. In addition to occasional rains, water was added at times to the mixtures. The extent of acid development after different periods of time, in terms of per cent acid (field weight basis) as determined by titration with sodium hydroxide and phenolphthalein for each of the mixtures, and also pH readings with a glass electrode at the same periods, are given in Table 1.

Table 1

Per Cent Acid (as Sulphuric) Developed and pH Readings in Sulphur Composts at Different Periods After Mixing

Compost Material	Period After Mixing: 4 Months		6 Months		8 Months	
	Per Cent Acid	pH	Per Cent Acid	pH	Per Cent Acid	pH
Sulphur and soil	0.055	2.35	0.88	1.98	1.21	1.65
Sulphur and manure	0.39	1.08	3.19	1.25	3.74	1.23
Sulphur and citrus peel	0.18	1.55	3.84	1.09	5.26	0.89

The soil used was low in calcium carbonate. The citrus-peel compost, in spite of the handicap of unquestionably lower initial sulphur-bacterium inoculation and a lime content of about 7 per cent (as CaO), after 8 months attained a higher acid content and a substantially lower pH than did either of the other mixtures.

Rains resulted in a temporary drop in the percentage of acid in the upper layers. A few days later the total acid would again increase and the pH would decrease, indicating a rapid renewal of sulphur oxidation activity probably due to the high population of sulphur bacteria that had developed. In a laboratory leaching experiment, compost with a reading of pH 1.39 was subjected to repeated leachings with distilled water, resulting in a pH reading of 3.53. The compost was then incubated at room temperature for six weeks, when the pH reading was 0.68.

Table 2

pH Readings on Sulphur and Sulphur Compost Mixtures with Soil in Jars, at Different Periods After Mixing

Compost Material	Rate, as Sulphur, per Acre-Foot, Tons	Period After Mixing: 38 Days	78 Days
Sulphur	5	7.65	7.58
Sulphur compost ...	5	5.49	5.19
Sulphur	10	6.68	6.51
Sulphur compost ...	10	4.19	3.98

An acid sulphur-compost was better than sulphur alone in bringing about a distinct lowering in soil pH. In the laboratory, sulphur alone was thoroughly mixed with soil (pH 8.08) at rates of 1 to 10 grams of sulphur to 875 grams of soil (equivalent to 1 to 10 tons per acre-foot). Similar mixtures were made with sulphur compost, at identical rates as to sulphur content. Representative pH readings are given in Table 2.

Considering a pH of around 5.5 as the desired pH, this was reached with the lower rate of application of sulphur compost in a little over a month, and was not attained at all by the sulphur alone. If applied in a band 8 inches wide and 1½ inches deep in rows spaced 3 feet apart, for the purpose of acidifying only a limited zone of soil, the rate of application designated as 5 tons per acre-foot would be only 278 pounds (as sulphur) per acre.

This principle in soil application of sulphur has been put into practical use in the alkaline Rio Grande Valley soils. Applications of sulphur in spots or holes in soil around chlorotic citrus trees have repeatedly cured the chlorosis. Spot applications of sulphur-compost in holes 10 inches deep about the bases of chlorotic rose bushes have resulted in practically complete recovery in 30 to 40 days. Presumably a part of the root system has penetrated the acidified zones of soil and has there been able to absorb sufficient iron for the needs of the plant, whereas in the originally alkaline soil the iron was in non-available form. The same treatment has been applied with excellent results to chlorotic gardenias, bougainvillea plants, and to petunias. Preliminary tests on the control of potato scab (*Actinomyces scabies*) with "band" applications of sulphur-compost in the plant row have shown decided promise. In one test, 400 pounds per acre (200 pounds sulphur) so applied gave an increase of marketable potatoes over the check at the rate of 2,100 pounds per acre, an increase of approximately 25 per cent. Obviously in all these tests the objective has not been to acidify the entire volume of soil, which is impractical in soils containing large quantities of calcium carbonate.

These tests have demonstrated the possibility of using sulphur composts as biologically active acid-producing mixtures, not only to develop quickly available acidity but also to continue to produce this acidity over a prolonged period, thus overcoming the effects of early neutralization or excessive leaching. One pound of sulphur can be oxidized to 3 pounds of sulphuric acid. The composts described and high-sulphur modifications thereof are indicated as having a place in agriculture where quick acidity and prolonged acid availability are desired, for some specific purpose, in limited soil zones.

SWEET POTATO RESEARCH BROADENS

Sweet potato starch offers a good example of the kind of results that may come from scientific research, says James T. Jardine, Director of Research, U. S. Department of Agriculture.

The original problem put to the chemists of the Department was to devise a practical and economical process for making sweet potato starch. This part of the problem has met with considerable success, although scientists are still improving the process. The starch is a quality product in demand on the market, and manufacture is expanding. The by-product pulp may be utilized advantageously as stock feed.

The first starch making was seasonal and lasted only a few weeks during the harvesting season. This created problem two, to find a way to use the raw material over a longer season and thus cut overhead expense. Research was started to develop chemical and heat treatments to take out of the ground potatoes enough water so the product would keep. The work on this is already under way and has pointed to a third problem, using dried potatoes for livestock feed.

If dried sweet potatoes could be kept for year-round feeding the sweet potato could come to be one of the most important feed crops of the South. Yields of sweet potatoes compare favorably in total food values with yields of corn. If sweet potato drying can be made cheap enough—perhaps through community drying plants—feeders may not need to depend on the by-product pulp of starch manufacture, but may grow sweet potatoes for drying without extracting the starch, thus producing a livestock feed that is cheaper than corn.

While the chemists are wrestling with these problems, plant breeders are developing new strains of high-yielding sweet potatoes that are high in starch.

A Water Hole on the Course at White Sulphur Springs.

The Convention Golf Tournament

The Golf Committee of the National Fertilizer Association, again headed by Albert B. Baker, has arranged an outstanding program of events for the afternoons of the coming Convention at White Sulphur Spring. The schedule for the three days calls for seventeen separate competitions for the men, with attractive prizes for winners and runners-up being offered by various companies in the fertilizer industry. For the ladies, there will be two putting competitions, and in addition the committee is planning an added regulation medal play tournament if sufficient entries are received.

The list of events include medal play handicap, match play against par, kickers handicap, tombstone handicap, medal play for "veterans," and a championship contest covering selected scores from play throughout the three days of the meeting. This schedule offers an opportunity for every golfer to come home a winner, whether he be rated as expert, good, medium, duffer or super-duffer.

All contestants in the men's events must be connected with companies which are members of the National Fertilizer Association or are directly affiliated with such companies. Those who expect to play, are requested to send their entries, together with their club handicaps, to the chairman of the Committee, Albert B. Baker, c/o Bradley & Baker, 155 East 44th Street, New York City, so that the proper handicaps can be assigned for the convention tournament.

The greens' fee, as arranged by the Association, will be $2.50 per day, which includes club cleaning and a locker at the Golf and Tennis Club. This fee, which covers play on all the Greenbrier courses, will also apply for the three days before and the three days after the Convention.

The Golf Committee for the 1940 Convention consists of Albert B. Baker, Chairman; E. H. Jones, J. R. McCarty, John A. Miller, J. A. Monroe, A. L. Walker, Jr., T. S. Whitsel.

The schedule of events is as follows:

Monday, June 3rd.

Medal Play Handicap; Match Play *vs.* Par; Kickers' Medal Handicap; Tombstone Handicap; Low Gross Score.

Tuesday, June 4th.

Medal Play Handicap; Veterans' Medal Handicap; Match Play *vs.* Par; Kickers' Medal Handicap; Tombstone Handicap; Low Gross Score.

Wednesday, June 5th.

Medal Play Handicap; Match Play *vs.* Par; Kickers' Medal Handicap; Tombstone Handicap; Low Gross Score.

June 3rd, 4th, and 5th.

Championship (Ringer Handicap).

Ladies' Events, June 4th.

Putting Contest for Golfers; Putting Contest for Non-Golfers.

The Donors of Prizes

The American Agricultural Chemical Co. (Rock Department), New York City.

American Cyanamid Co., New York City.

American Potash & Chemical Corporation, New York City.

The Barrett Company, New York City.

F. W. Berk & Co., Inc., New York City.

California Chemical Co., New York City.

Chilean Nitrate Sales Corporation, New York City.

E. I. du Pont de Nemours & Co. (Ammonia Department), Wilmington, Del.

International Agricultural Corporation (Rock Department), New York City.

The Potash Company of America, Baltimore, Md.

Southern Phosphate Corporation, Baltimore, Md.

Texas Gulf Sulphur Company, New York City.

Union Special Machine Company, Chicago, Ill.

United States Potash Company, New York City.

The National Fertilizer Association.

A Close Match at White Sulphur Springs

Potash Case Reaches Amicable Settlement

ON May 21st, the U. S. Department of Justice presented to the District Court for the Southern District of New York a proposed civil decree in the cases against a number of potash importing and producing companies in which violations of the Sherman Anti-Trust Act were charged. If the decree is approved by Judge Clancy, the decree will terminate the litigation and the indictment against the companies will be dismissed. Thus an amicable conclusion will be reached to a case which has been of great interest to the fertilizer industry.

About a year ago, on May 26, 1939, a grand jury in the U. S. District Court for Southern New York returned an indictment against the N. V. Potash Export My., the American Potash & Chemical Corporation, the Potash Company of America, and the United States Potash Company, charging a combination to fix prices and otherwise restrain trade.

The potash companies immediately started negotiations with the government officials, with the result that the Department of Commerce made an economic investigation of conditions in the potash industry. Their report, which was released on May 4, 1940, covered about 100 pages and reviewed the history of the industry and its marketing system. The recommendations of the Department of Commerce included:

"Establishment of a price differential of approximately $7 per ton between the price of Carlsbad, New Mexico, one of the two important sources of domestic production, and the price at the seaboard. At the present time, prices at Carlsbad and at the seaboard are identical.

"Establishment of a multiple discount system, in place of the present single discount, to encourage purchase of potash by fertilizer mixers in advance of their requirements, smooth the rate of delivery to mixers and discourage cancellation.

"Modification of sales policy so as to permit consumers to purchase direct from producers in carload lots for their own use at regular quoted prices with the usual discount, thus opening up a new source of supply in addition to the existing source, which is the fertilizer mixers."

With respect to the establishment of a $7 differential between prices at Carlsbad, New Mexico, and the seaboard, the report states:

"On this basis, using present price lists, a 61% muriate with the full 12% discount would continue to be delivered on the Atlantic coast for $28.72 per ton, whereas, in the important markets of the Ohio Valley and near the Great Lakes, prices on a delivered basis would be reduced one to two dollars per ton—a substantial savings to the consumer on a consumption of nearly 100,000 tons in this basin.

"The creation of a wide area in which the domestic suppliers would dominate the price structure is the significant point in the use of a $7.00 price differential between Carlsbad and the Atlantic ports. It represents an important break from the present importer-dominated price structure. As the domestic industry continues to expand its proportion of the total supply, it can be assumed that it will more and more take the primary position in price determination, and the price structure, once released from the present pattern, will increasingly represent a mill price system."

New Pricing Basis

These recommendations were agreed to by the potash companies and formed the basis for the proposed civil decree which was submitted on May 21st. This decree prohibits the defendants from agreeing to fix, maintain or adhere to the prices to be charged for potash, the terms and conditions of sale or the discounts to be allowed to purchasers; from agreeing to refrain from competing with each other; from agreeing to quote prices only on the basis of c.i.f. certain ports or to select the ports which will be used for the purpose of such quotations; or from agreeing to refuse to sell potash to individual farmers, from cooperatives or to fertilizer mixers not recognized or approved by all the defendants. The proposed decree does not include the importer, N. V. Potash Export My., Inc., which, in consequence of war, has ceased to do business, and whose principal European officers, being of French and German nationality, are unable to communicate with each other. The principal American employees of this company are, however, included in the decree.

In addition, each of the domestic companies has stated its intention of putting into effect the recommendations of the Department of Commerce to grant to buyers an option of

(Continued on page 26)

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Principal Articles in This Issue

COTTONSEED MEAL USED ON COTTON FARMS AS FERTILIZER, 1927-1939

A very small quantity of cottonseed meal is expected to be used as fertilizer on cotton farms in the South in 1940. The quantity indicated for use in 1940 is approximately 75,000 tons as compared with 93,000 tons in 1939. The 10-year (1929-38) average quantity is 180,000 tons. The high year was 1932 in which approximately 465,000 tons were used, and the previous low year was 1937 when 84,000 tons were used.

The quantity utilized for fertilizer fluctuates from year to year, apparently depending upon the price of cottonseed meal relative to the prices of other livestock feed and, of other nitrogenous fertilizers.

The indicated quantities of cottonseed meal used for fertilizer are based upon reports from crop correspondents with respect to the utilization of cottonseed and of cottonseed meal. These reports are used also in determining the proportion of cottonseed which is sold from farms, the quantity which is exchanged for cottonseed meal at the gin or oil mill, and the quantity which is retained on the farm for seed, feed, and fertilizer.

The indicated quantities of cottonseed meal used as fertilizer serve only as a rough measure of the amounts used, and should not be regarded as definite estimates. Since no information of any kind is received from other than cotton farms, the data relate only to farms producing cotton. Additional quantities of cottonseed meal undoubtedly are used as fertilizer on other farms.

Cottonseed Meal Used as Fertilizer on Cotton Farms

Estimated by Agricultural Marketing Service, U. S. Department of Agriculture

State	10-year average 1929-38 Tons	1939 Tons	1940 Tons
Missouri	529	0	0
Virginia	406	180	150
N. Carolina	48,679	19,260	21,320
S. Carolina	39,385	27,360	21,670
Georgia	31,585	12,100	8,950
Florida	2,904	1,620	620
Tennessee	968	1,530	600
Alabama	19,479	7,680	3,490
Mississippi	8,326	5,300	5,640
Arkansas	4,947	6,600	3,770
Louisiana	5,737	4,520	3,320
Oklahoma	1,079	250	700
Texas	15,661	6,860	5,070
United States	179,685	93,260	75,300

FINAL COTTON REPORT FOR 1939

In revising estimates of acreage, yield, and production of the 1939 cotton crop, the Crop Reporting Board estimates the area in cultivation in the United States on July 1, 1939 to have been 24,683,000 acres, the area harvested 23,805,000 acres, and the yield of lint cotton 237.9 pounds per harvested acre. Production in 1939 of 11,817,000 bales is about 126,000 bales, or 1.1 per cent below the 1938 crop and 14.4 per cent below average production in the period 1928-37. Except for the years 1934 and 1935, the United States cotton production for 1939 was the smallest since 1923.

The acreage harvested in 1939 was approximately 1.8 per cent smaller than the harvested acreage in 1938 and 32.0 per cent smaller than the average harvested for the 10-year period 1928-37.

The revised estimates of planted and harvested acreage for the United States are about one-half of 1 per cent below the preliminary estimates made last December. The acreage estimates are in substantial agreement with the acreage as measured by the Agricultural Adjustment Administration. The yield per acre as estimated is about 0.8 of 1 per cent above the December estimate.

Forecasts of cotton production made by the Crop Reporting Board during the 1939 season for the first of each month, and percentage comparisons with final production are as follows: August, 11,412,000 bales, 3.4 per cent below final production; September, 12,380,000 bales, 4.8 per cent above; October, 11,928,000 bales, 0.9 per cent above; November, 11,845,000 bales, 0.2 per cent above; December, 11,792,000 bales, 0.2 per cent below final production. The final State estimates of cotton production represent the total ginnings reported by the Bureau of the Census with allowance for interstate movement of seed cotton for ginning. The report of that Bureau published on May 21st placed the final ginnings for the 1939 crop at 11,815,759 equivalent 500-pound bales.

SOYBEAN ACREAGE EXPANDS

Another large increase—about 18 per cent—in the acreage of soybeans is in prospect, as indicated by farmers who have reported their "intentions to plant" to the United States Department of Agriculture. Not until 1934 did American farmers plant as many as 5,000,000 acres of soybeans grown alone—that is, excluding plantings where soybeans are seeded with another crop, such as corn, to increase the feed, or for turning under for fertilizer. Last year the soybean acreage was about 9,000,000 acres and will probably exceed 10,500,000 acres this year.

SOIL TESTING SERVICES TO SAVE FARMERS MONEY

Thousands of dollars will be saved this year by North Carolina farmers who have taken advantage of the State Department of Agriculture's free soils testing service in an effort to effect economy in the purchase of fertilizers and increase crop yields.

That is the opinion of Dr. I. E. Miles, director of the Department's soils testing division, who reports that from February 1st to date 60,000 tests on 7,000 soil samples have been made for farmers, who have also been given free fertilizer recommendations based on the type crop to be grown on the individual field.

"No informed agricultural leader would term rapid soils testing a solution for all soil ailments," Dr. Miles emphasized. However, in the hands of trained workers, soils testing is a valuable tool and when properly used can result in substantial economy in the purchase and use of fertilizers."

When soils are submitted to the Department chemists, they undergo analysis to determine chemical ingredients. On the basis of chemicals found in the soil and after considering the crop to be grown on the particular land, the agronomist recommends to the farmer the fertilizer containing the necessary plant food to assure greatest economy and crop production.

"The farmer is questioned in detail as to the cropping and fertilizer history of each soil sent to the testing laboratory for analysis," Dr. Miles explained. "Information obtained is not only valuable to the agronomist making fertilizer recommendations, but furnishes valuable background material that can be used in connection with future soils tests and fertilizer recommendations."

Dr. Miles said that soils tests were used to:

1. Determine whether or not a specific crop will grow on the particular soil analyzed.
2. Determine whether or not a specific soil can be economically treated and adapted to growth of a specific crop.
3. Determine the degree of acidity or "sourness" of the soil.
4. Determine the plant food deficiencies of soils and provide fertilizer and lime recommendations that will give the soil the necessary "food" to permit the profitable growth of a specific crop.

Survey of New Fertilizer Distributing Machinery

In view of the interest in better fertilizer distributing machinery for the farmer, a survey has been made by Fred H. Bateman, chairman of the Committee representing the Farm Equipment Institute on the National Joint Committee on Fertilizer Application. Some of the new developments in this branch of farm machinery are as follows:

The S. L. Allen & Co., Inc., of Philadelphia, have added to their line a gang seeder combined with a fertilizer distributor which applies the fertilizer in bands on both sides of the row. This seeder is primarily used for vegetables but can be used for small grains, alfalfa, clover, etc.

The Deere & Mansur Works, Moline, Ill., have placed on the market two new tractor planters for cotton and corn. Fertilizer is placed about two inches to one side of the seed and below the seed level.

Gilson Bolens Manufacturing Co., Port Washington, Wis., have added to their line a distributor designed to apply fertilizer below the surface of the soil through shoes provided for the purpose, at the desired distance and depth in relation to the seed.

The Holland Celery Planter Co., Holland, Mich., have changed their transplanter to provide for a larger hopper and for opening the soil by means of spring drag teeth.

Sargeant, Osgood & Roundy Co., Randolph, Vt., have added an improved plow to their "King of the Cornfield" planter, which plants corn, beans, peas, beets, and similar seeds. It is claimed that by its use narrow bands of fertilizer are placed on each side and from one to one-and-a-half inches below the seed.

The J. I. Case Co., Racine, Wis., have improved their grain drill to provide for more accurate adjustment and greater range as to rate of application.

The Minneapolis-Moline Power Implement Co. have added new fertilizer equipment to their four and six-row beet drills and practically their entire line of grain drills. The new drills are provided with separate fertilizer tubes intended to avoid contact of fertilizer and seed.

The Van Brount Mfg. Co., Horicon, Wis., have redesigned and improved their fertilizer attachment to fit any of their standard grain drills, and when desired extra tubes and spouts can be supplied which will distribute fertilizer separately from the seed.

The Oliver Farm Equipment Co. and the Ohio Cultivator Co. have modified their drills to prevent leakage and to make possible the application of concentrated and granulated fertilizers.

The Ontario Drill Co., Rochester, N. Y., have put out a number of drills for research and demonstration purposes. These drills are equipped with an extra set of hoes which makes possible application of fertilizer to one side of each row. They are of the standard small-grain type but are also used for drilling cannery peas and could be used for soybeans and similar crops. The company has not placed this type of drill on the general market, but will make it on order equipped with either disc or shovel openers. An additional charge will be made for the extra hoes.

CARPENTER ELECTED DuPONT PRESIDENT

The Board of Directors of E. I. du Pont de Nemours & Co., at a meeting on May 20th, elected Walter S. Carpenter, Jr. to the office of president, succeeding Lammot du Pont who becomes chairman of the board. Pierre S. du Pont, former board chairman, will continue as a member of the board.

FERTILIZER MATERIALS MARKET

NEW YORK

Some Movement of Materials Against New Contracts Reported. Sulphate of Ammonia Still Scarce. New Basing Point for Domestic Potash Expected.

Exclusive Correspondence to "The American Fertilizer."

NEW YORK, May 21, 1940.

Deliveries of raw fertilizer materials against old contracts are about completed but some raw materials against new seasonal contracts have started to move.

We believe that nitrate of soda is moving in fair demand for top dressing.

Sulphate of ammonia is the one article that continues scarce and, whereas it was expected that export price for June delivery might be reduced somewhat, at the moment quoted price for export for June delivery seems to be on about the same level as previously.

Nitrate of Soda

Price continues on same schedule of $27.00 in bulk, $28.30 in 200-lb. bags and $29.00 in 100-lb. bags, port basis.

Nitrogenous Material

The firmer market continues with some additional bookings having been made. We understand that Milorganite is quoted for monthly shipments through November at $1.50 per unit of ammonia ($1.82½ per unit N) and 40 cents per unit P_2O_5 per ton of 2,000 lb. in bulk, f.o.b. Milwaukee, with increase to $1.60 ($1.94½ per unit N) for shipments December forward. Chicago tankage, it is reported, is quoted at $1.40 ($1.70 per unit N).

Potash

Schedule price for potash is unchanged at 53½ cents per unit K_2O, in bulk, basis ex vessel. It is expected that the new seasonal price will be the same as for the present season, that is, the early buyers will obtain material at 53½ cents less 12 per cent, per unit K_2O in bulk, basis ex vessel. However, it is expected that in the new season Carlsbad will be taken as the basing point. The price at Carlsbad will be $7.00 per ton less than the above indicated price and buyers will order at this ton price where the delivered price will figure cheaper for them than port price plus additional freight for delivery to destination.

Superphosphate

This market is firm at $8.50 per ton for run-of-the-pile material for domestic use.

Dried Blood

The market for this material has weakened considerably, probably due to cancellation of contracts for shipments from South America to Europe. This material is available for shipment to U. S. ports at $2.60 to $2.65 ($3.16 to $3.22 per unit N).

BALTIMORE

End of Spring Season in Sight. Tonnage Problematical. Market Easier. Bag Prices Advance.

Exclusive Correspondence to "The American Fertilizer."

BALTIMORE, May 21, 1940.

The spring season is now drawing to a close but it is yet too early to estimate with any degree of accuracy as to how the tonnage compared with last season. There has, however, been very little buying interest in supplies of spot stocks, in consequence of which the market has been easing off.

Ammoniates.—The market on feeding tankage remains fairly firm, and is nominally $3.30 per unit of nitrogen and 10 cents per unit of B. P. L., f.o.b. Baltimore.

Nitrogenous Material.—There is an easier situation in this ingredient and summer deliveries are obtainable around $2.75 per unit of nitrogen, f.o.b. coast producing points, which represents quite a reduction over the peak price of the season.

Sulphate of Ammonia.—Supplies are still short and all mills are running behind in their deliveries. Re-sale lots are nominally quoted at $33.00 to $34.50 per ton, in bulk, f.o.b. Baltimore.

Nitrate of Soda.—There has been a fairly good demand throughout the spring season and the market remains unchanged at $29.00 per ton of 2,000 lb., in 100-lb. bags, f.o.b. port

warehouse for both the imported and domestic products, with usual differential for 200-lb. bags and in bulk.

Fish Scrap.—Although the market on meat meal is ruling slightly easier, fish scrap continues unchanged around $4.25 per unit of nitrogen and 10 cents per unit of B. P. L., f.o.b. fish factory. Japanese sardine meal is quoted around $55.00 per ton, while domestic 55 per cent menhaden fish meal is offered at $58.00 per ton of 2,000 lb., f.o.b. Baltimore.

Superphosphate.—With advancing ocean freight rates, it would not be surprising to see a firmer situation, although manufacturers continue to quote run-of-pile at $8.50 per ton of 2,000 lb., basis 16 per cent, and $9.00 per ton for flat 16 per cent grade, both in bulk, f.o.b. Baltimore.

Potash.—Stocks in the hands of fertilizer manufacturers as well as producers, have been ample to take care of season's requirements, with the result that there has been practically no re-sale demand, and considerable interest has now been centered on prospects of prices for another season, which will probably not be announced for another month or so.

Bone Meal.—Offerings continue scarce, and 3 and 50 per cent domestic ranges from $32.00 to $35.00 per ton, while 4½ and 50 per cent South American raw bone meal is quoted at $31.00 to $32.00 per ton, c.i.f. Baltimore.

Bags.—The market on burlap is considerably higher, and the present price of plain, new, 10-oz. bags, basis 40 cut 54 in., is about $128.00 per thousand delivered basis Baltimore, over balance of this year.

ATLANTA

War Conditions Upset Markets. America Fairly Well Supplied with Domestic Materials. Fishing Season Poor.

Exclusive Correspondence to "The American Fertilizer."

ATLANTA, May 21, 1940.

Due to the European crisis, all markets here in this country are very irregular and the outcome of events in Europe are awaited with concern and apprehension.

Fortunately, from a fertilizer standpoint, our country is fairly well self-contained at the present time and we are no longer dependent upon Europe for potash. Our nitrogen supply, augmented with Chilean nitrate, is more than ample for our needs and, of course, we still have access to various and sundry South American supplies, including packing house by-products, vegetable meals, etc.

Domestic fishing, due to a late spring and bad weather conditions, has been a failure to date on the Atlantic seaboard with practically nothing caught. Conditions, however, should improve with the advent of more seasonable weather, when it is expected that the normal supply will be available although late.

Imported fish meal has just about been cleaned up and it will be late summer or early fall before additional supplies can arrive. Even then, due to high freights and shipping difficulties, prices are likely to be high.

Until conditions settle down and we can get a clearer picture of just what the market may do, we see little point in attempting to quote prices at this particular time as they would probably be out of date before this communication goes to press.

CHICAGO

Advancing Fertilizer Material Prices Meeting Resistance. Prices on Feed Materials Remain Firm.

Exclusive Correspondence to "The American Fertilizer."

CHICAGO, May 20, 1940.

While a good sized tonnage of organics has recently been booked, sellers are not meeting much encouragement with their advanced prices. The decline in various commodities has naturally caused many manufacturers to lose buying interest, at least for the time being, and the market is consequently quiet.

The edge appears to be off in the feed market, particularly in some sections, but sellers asking prices for materials remain fairly firm.

Nominal prices are as follows: High grade ground fertilizer tankage, $2.40 to $2.50 ($2.91½ to $3.04 per unit N) and 10 cents; standard grades crushed feeding tankage, $3.10 to $3.20 ($3.77 to $3.89 per unit N) and 10 cents; blood, $2.90 to $3.00 ($3.52½ to $3.64½ per unit N); dry rendered tankage, 67 to 72 cents per unit of protein, Chicago basis.

PHILADELPHIA

Prices Somewhat Lower with Slackening Demand. Fair Demand for Bone Meal.

Exclusive Correspondence to "The American Fertilizer."

PHILADELPHIA, May 21, 1940.

There continues to be no demand for fertilizer materials and prices have eased off slightly. Contract deliveries are fair.

Nitrate of Soda.—Price remains the same. Deliveries on contracts about normal.

Sulphate of Ammonia.—Price firm, but demand not so great.

Dried Blood.—Weaker. Being offered at about $2.75 to $2.80 ($3.34½ to $3.40½ per unit N). No interest.

Tankage.—No change. Nominal price $2.75 to $2.80 per unit ammonia ($3.34½ to $3.40½ per unit N) and 10 cents per unit of B. P. L.

Bone Meal.—Demand fair. 3 and 50 per cent about $33.00; 4½ and 45 per cent at $36.00 to $37.00.

Superphosphate.—Firm. Price remains the same.

Potash.—Syndicate schedule prevails.

WILMINGTON

Poor Growing Weather Stimulates Use of Nitrate of Soda. Feed Demand for Fish Scrap in Evidence.

Exclusive Correspondence to "The American Fertilizer."

WILMINGTON, May 20, 1940.

Conditions along the fertilizer front have been truly "all quiet" for the past two weeks. Shipment of mixed goods is over and there has been a lull in the movement of nitrate of soda. However, a pick up in orders was noticed this

week and it is believed that the movement will be heavy from now on and, if the weather is favorable, the movement should continue through June. Cool weather is causing poor germination and poor growth in the cotton fields and to catch up the slack it will require good nitrate applications.

Fertilizer matetrials generally are very quiet. Unusual carry-over of organic materials has had a blanketing effect on the market and the buyers generally are waiting to see what effect the war developments will have before making further commitments of any volume.

Several of the companies have recently had summons in the Government investigation and records have been moving to Winston-Salem by the truck load.

Fishing along the South Atlantic coast has been unusually poor. All of the operators are far behind this time last year in catch. Feeding demand has kept a very strong market on edible scrap and consequently there will be less of the catch made into acidulated scrap this year.

TENNESSEE PHOSPHATE

Monsanto Announces Plans for New Phosphorus Furnace. TVA Phosphate Rock Bids Opened.

Exclusive Correspondence to "The American Fertilizer."

COLUMBIA, TENN., May 20, 1940.

The anticipated increase in demand for phosphorus compounds, so vitally important in the industries of peace, so vastly called for in time of war, is reflected in the recent announcement by Monsanto Chemical Co. that its already huge capacity for production of yellow elementary phosphorus will be practically doubled by the immediate erection of an additional phosphorus furnace at Monsanto about equal in capacity to the three furnaces now in operation there. Completion of the work is expected early in 1941.

Recent bids for phosphate rock opened by the TVA showed only two bidders from the Tennessee Field, one for 60,000 and one for 30,000 tons, but about the same time some four or five bids were received from Florida producers aggregating over 200,000 tons.

The prices were lower in both fields, which would be expected as long as there is competition for the large sized contracts, exceeding in size anything obtainable in ordinary commercial production.

Those who remember the last world war and the many periods of sudden violent changes in prices before and since that time, see the present condition as typical of the sag that has always come before a sudden rise, and it is generally agreed that if the war is not settled in the next few months the phosphate market will be in the most hectic condition it has ever known before snow flies again. Many of the farmers of the cornbelt and other areas who have learned of the great value to them from liberal applications of raw ground phosphate rock to their soils, are still buying, causing shipments to continue in good volume long past the usual end of the season. If the bulge in price and demand by the manufacturers which seems so certainly imminent now, materializes, these farmers will have proven themselves wise indeed.

NEW HAYWARD BUCKET BULLETIN ISSUED

Containing eight pages of helpful suggestions for rehandling bulk materials such as fertilizer materials, coal, ashes, coke and slag, the new bulletin just published by The Hayward Company, 50 Church Street, New York, N. Y., not only describes the modern Hayward Electric Motor Bucket but also shows many striking illustrations covering the wide variety of applications for which this bucket is recom-

A Complete Service

THE strategic factory locations of the American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Glue, Ground Limestone, Crushed Stone, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish, Blood and Tin-Tetrachloride. We mine and sell all grades of Florida Pebble Phosphate Rock.

FACTORIES

Alexandria, Va.	Detroit, Mich.	Pierce, Fla.
Baltimore, Md.	East Point, Ga.	Port Hope, Ont., Can.
Buffalo, N. Y.	East St. Louis, Ill.	Presque Isle, Me.
Carteret, N. J.	Greensboro, N. C.	Savannah, Ga.
Cayce, S. C.	Henderson, N. C.	Searsport, Maine
Chambly Canton, Quebec, Can.	Montgomery, Ala.	South Amboy, N. J.
	Norfolk, Va.	Spartanburg, S. C.
Charleston, S. C.	No. Weymouth, Mass.	West Haven, Conn.
Cincinnati, Ohio	Pensacola, Fla.	Wilmington, N. C.
Cleveland, Ohio		Havana, Cuba

The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York City

SALES OFFICES

Alexandria, Va.	Columbia, S. C.	Laurel, Miss.	Pierce, Fla.
Baltimore, Md.	Detroit, Mich.	Montgomery, Ala.	Port Hope, Ont.
Buffalo, N. Y.	East Point, Ga.	Montreal, Quebec, Can.	Savannah, Ga.
Carteret, N. J.	East St. Louis, Ill.	New York, N. Y.	Spartanburg, S. C.
Charleston, S. C.	Greensboro, N. C.	Norfolk, Va.	St. Paul, Minnesota
Cincinnati, Ohio	Henderson, N. C.	No. Weymouth, Mass.	Wilmington, N. C.
Cleveland, Ohio	Houlton, Me.	Pensacola, Fla.	Havana, Cuba

mended. From beginning to end, it is filled with usable facts, figures and text that are intended to appeal to everyone, from the executive in charge of the work to the bucket operator on the job.

The Hayward Electric Motor Bucket is furnished in sizes ranging from 7½ cubic feet up to 3 cubic yards. It is the ideal bucket for use in those industrial plants where overhead cranes are installed. Simply hooking the bucket on the crane and plugging in the electric feeder cable are all that are necessary to put the bucket to work. No special circuits or controllers are necessary. Nor are there any latches, hand lines, ropes or limit switches to bother with.

The manufacturer announces that copies of this bulletin, designated as Bulletin No. 705, are now ready for distribution and upon request will be mailed without cost to all interested.

DEPARTMENT OF JUSTICE INVESTIGATION

According to newspaper reports, Judge Johnson J. Hayes has denied the motion of two subpoenaed fertilizer companies for a temporary injunction against the use of their records which had been delivered to the Winston-Salem grand jury. The companies are also seeking the return of such records to them. A press account states that attorneys for the companies contended they had reason to believe that the companies' records would be misused, and attacked the anti-trust examination of records and the general use of the grand jury for the probe, terming it a "cloak" for an "economic investigation" of conditions in the fertilizer industry. Judge Hayes held that the grand jury probe was being carried out in complete accordance with the court's wishes and that they were entitled to the full use of the companies' records. The companies have given notice of appeal to the Fourth Circuit Court of Appeals from the decision of Judge Hayes denying their motion.

Along the Bridle Path at White Sulphur Springs

PLANT FOOD RESEARCH COMMITTEE ENLARGED

As the size of the Plant Food Research Committee of the National Fertilizer Association was increased from 15 to 20 members by action of the Association at its Atlanta Convention last fall, President Sanford has appointed the following additional members to that Committee:

Frank L. Holland, Florida Agricultural Research Institute, Winter Haven, Fla.; R. G. Kreiling, Armour Fertilizer Works, Atlanta, Ga.; Dr. Wallace Macfarlane, Pacific Guano Co., Los Angeles, Cal.; Dr. Arthur M. Smith, Synthetic Nitrogen Products Corp., New York, N. Y.; and Dr. J. K. Plummer, Tennessee Corp., New York, N. Y.

S. D. Gray, American Potash Institute, Washington, D. C., was appointed to fill the vacancy created by the resignation of G. J. Callister.

Over 1,000,000 Tons of Lime Supplied in 1940 AAA Program

The Agricultural Adjustment Administration has announced that farmers participating in the 1940 Agricultural Conservation Program have received more than a million tons of lime and 100,000 tons of superphosphate under the AAA grant of aid project.

The materials, furnished by the AAA in lieu of cash conservation payments, are used by farmers in carrying out approved soil-building practices under the Agricultural Conservation Program. They are applied to permanent pastures and in connection with the seeding of legumes and grasses.

A report of transactions through May 3 shows that 1,099,694 tons of lime, 100.699 tons of concentrated (45 to 48 per cent) superphosphate, and 26,551 tons of 20 per cent superphosphate have been distributed under the program. Total deliveries for the 1940 program are expected to be somewhat larger, as farmers in most States may continue to apply for these materials for several months longer.

Under the 1939 grant of aid program, farmers used 660,610 tons of lime and 136,736 tons of concentrated superphosphate.

Entrance to The Greenbrier, White Sulphur Springs

Amounts of lime and superphosphate furnished to farmers so far this year, are shown, by States, in the following table:

Region and State	Concentrated Superphosphate (Tons)	20 Per Cent Superphosphate (Tons)	Liming Materials (Tons)
East Central			
Delaware			471
Kentucky	36,355	8,476	26,376
Maryland	169	284	5,977
North Carolina	2,755	2,601	145,548
Tennessee	10,217	1,705	100,036
Virginia	8,926	3,704	189,655
West Virginia	6,139	1,136	69,145
Total	64,561	17,906	627,208
Northeast			
Connecticut	1,054		27,420
Maine	3,867		28,555
Massachusetts	1,873		16,266
New Hampshire	5,129		22,639
New York			181,505
Pennsylvania	765	1,262	42,334
Rhode Island	343		2,736
Vermont		7,383	24,038
Total	13,031	8,645	345,493
North Central			
Illinois	137		
Indiana	1,013		23,367
Iowa	668		13,252
Missouri	1,795		
Ohio	1,400		11,657
Wisconsin	2,021		3,318
Total	7,034		51,594
Southern			
Alabama	1,527		9,510
Arkansas	6,676		2,964
Georgia	187		23,374
Mississippi	691		246
Oklahoma	43		63
South Carolina			39,242
Total	9,124		75,399
Western			
Oregon	3,474		
Washington	3,475		
Total	6,949		
Grand Total	100,699	26,551	1,099,694

See Page 4

COTTONSEED MEAL OUTPUT

With three-fourths of the crop year completed, the tonnage of cottonseed received and crushed at the mills is approximately the same as for the same period of the previous year. From August 1, 1939 to April 30, 1940, a total of 4,003,054 tons of seed had been received and 3,952,034 tons crushed, as compared with similar figures for 1938-39 of 4,102,537 and 4,098,179 tons respectively. Cottonseed cake and meal produced to April 30th amounts to 1,788,119 tons, as against 1,850,452 tons during the same period of the previous year.

POTASH CASE REACHES AMICABLE SETTLEMENT

(Continued from page 11)

buying at delivered prices or f.o.b. the domestic points of production at Carlsbad and Trona respectively. The two Carlsbad companies, Potash Company of America and United States Potash Company, have announced that for the coming fertilizer season the differential at Carlsbad will be $7.00 less than the seaboard price for high grade salts, while the Trona company, American Potash & Chemical Corporation, has announced that the differential at Trona will be $5.00. Provision is made for reviewing the differential in the future.

All three companies have also announced their intention of selling potash in carload lots to cooperatives and other agricultural consumers at the same price quoted to fertilizer mixers. Lastly, each of the companies has indicated its intention, during the present European war, to advise the Department of Justice and Commerce of any proposed increases in prices.

The establishment of a customer's option to buy on a delivered basis or f.o.b. point of production at the proposed differential will result in both immediate and long run advantages of a substantial nature to consumers and is in accord with the department's established policy of requiring constructive action over and above a mere agreement not to violate the anti-trust laws in the future.

The proposed differential will result in reduced prices for potash, as compared with 1939 prices, in nearly all States West of the Alleghenies. While the reduction will vary from point to point, it is estimated that, on the basis of 1939 prices, the total savings to consumers will be in excess of $200,000 for the forthcoming fertilizer year alone.

The potash companies have cooperated fully with the Department of Justice, and each has voluntarily taken action which is almost certain to prevent a recurrence of a sudden price rise, which in the last war went to $300 to $400 per ton. These substantial and far-reaching benefits could not be obtained by simple imposition of criminal penalties. For that reason the department felt justified in recommending the proposed settlement.

THE 1940 ANNUAL CONVENTION

(Continued from page 6)

names for the consideration of the membership.

In addition to the directors-at-large, district directors will be chosen by the members of Districts 1, 2, 3, 4, 5, 6 and 12. These elections will be held either at the Convention or at separate District Meetings. The district directors whose terms expire this year are: District 1, L. E. Britton, Consolidated Rendering Co., Boston, Mass.; District 2, George Cushman, Long Island Produce & Fertilizer Co., Riverhead, N. Y.; District 3, Wm. B. Tilghman, Wm. B. Tilghman Co., Salisbury, Md.; District 4, O. F. Smith, Smith-Douglass Co., Norfolk, Va.; District 5, George W. Gage, Anderson Fertilizer Co., Anderson, S. C.; District 6, H. B. Baylor, International Agricultural Corp., Atlanta, Ga.; District 12, Weller Noble, Pacific Guano Co., Berkeley, Calif.

BUYERS' GUIDE

A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

This list contains representative concerns in the Commercial Fertilizer Industry, Including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

ACID BRICK
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

ACID EGGS
Chemical Construction Corp., New York City.

ACIDULATING UNITS
Chemical Construction Corp., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.

AMMO-PHOS
American Cyanamid Co., New York City.

AMMONIA—Anhydrous
Barrett Company, The, New York City.
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA LIQUOR
Barrett Company, The, New York City.
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.

AMMONIA OXIDATION UNITS
Chemical Construction Corp., New York City.

AMMONIATING EQUIPMENT
Sackett & Sons Co., The A. J., Baltimore, Md.

APPARATUS—Laboratory
Sturtevant Mill Co., Boston, Mass.

AUTOMATIC ELEVATOR TAKEUPS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BABBITT
Sackett & Sons Co., The A. J., Baltimore, Md.

BAGS AND BAGGING—Manufacturers
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Paper
Bagpak, Inc., New York City.
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS (Waterproof)—Manufacturers
Bemis Bro. Bag Co., St. Louis, Mo.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, East Point, Ga.
Bagpak, Inc., New York City.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

BAG-CLOSING MACHINES
Bagpak, Inc., New York City.

BAG PILERS
Link-Belt Company, Philadelphia, Chicago.

BEARINGS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

BELT LACING
Sackett & Sons Co., The A. J., Baltimore, Md.

BELTING—Chain
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

BELTING—Leather, Rubber, Canvas
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

BOILERS—Steam
Atlanta Utility Works, East Point, Ga.

BONE BLACK
American Agricultural Chemical Co., New York City.
Armour Fertilizer Work, Atlanta, Ga.
Huber & Company, New York City.

BONE PRODUCTS
American Agricultural Chemical Co., New York City.
Armour Fertilizer Work, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City.
Pacific Coast Borax Co., New York City.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Burns & Company, L. D., Atlanta, Ga.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Keim, Samuel L., Philadelphia, Pa.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

BUCKETS—Elevator
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

BUCKETS—For Hoists, Cranes, etc., Clam Shell, Orange Peel, Drag line, Special; Electrically Operated and Multi Power
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.

BURNERS—Sulphur
Chemical Construction Corp., New York City.

BURNERS—Oil
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CABLEWAYS
Hayward Company, The, New York City.

CALCIUM-NITRATE
Synthetic Nitrogen Products Co., New York City.

CAL-NITRO
Synthetic Nitrogen Products Co., New York City.

CARBONATE OF AMMONIA
American Agricultural Chemical Co., New York City.
Du Pont de Nemours & Co., E. I., Wilmington, Del.

CARS—For Moving Materials
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARTS—Fertilizer, Standard and Roller Bearing
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

CASTINGS—Acid Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

CASTINGS—Iron and Steel
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CEMENT—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

CHAIN DRIVES—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAINS AND SPROCKETS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHAMBERS—Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CHEMICAL APPARATUS
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

CHEMICALS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Du Pont de Nemours & Co., E. I., Wilmington, Del.

CHEMICALS—Continued
Huber & Company, New York City.
Wellmann, William E., Baltimore, Md.

CHEMICAL PLANT CONSTRUCTION
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Co., Savannah, Ga.
Stillwell & Gladding, New York City.
Wiley & Company, Baltimore, Md.

CLUTCHES
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CONCENTRATORS—Sulphuric Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

CONDITIONERS AND FILLERS
American Limestone Co., Knoxville, Tenn.

CONTACT ACID PLANTS
Chemical Construction Corp., New York City.

COPPER SULPHATE
Tennessee Corporation, Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

CRANES AND DERRICKS
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill. and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

CYANAMID
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

DENS—Superphosphate
Chemical Construction Corp., New York City.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

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DISINTEGRATORS
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

DOUBLE SUPERPHOSPHATE (See Superphosphate—Concentrated)

DRYERS—Direct Heat
Sackett & Sons Co., The A. J., Baltimore, Md.

DRIVES—Electric
Link-Belt Company, Philadelphia, Chicago.

DUMP CARS
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

DUST COLLECTING SYSTEMS
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

ELECTRIC MOTORS AND APPLIANCES
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

ELEVATORS AND CONVEYORS—Portable
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

ENGINES—Steam
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

EXCAVATORS AND DREDGES—Drag Line and Cableway
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill. and Cedar Rapids, Iowa.

FERTILIZER MANUFACTURERS
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Farmers Fertilizer Co., Columbus, Ohio.
International Agricultural Corp., New York City.
Smith-Rowland Co., Norfolk, Va.
U. S. Phosphoric Products Corp., New York City.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Link-Belt Company, Philadelphia, Chicago.

FOUNDERS AND MACHINISTS—Continued
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GARBAGE TANKAGE
Wellmann, William E., Baltimore, Md.

GEARS—Machine Moulded and Cut
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

GEARS—Silent
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

GELATINE AND GLUE
American Agricultural Chemical Co., New York City.

GUANO
Baker & Bro., H. J., New York City.

HOISTS—Electric, Floor and Cage Operated, Portable
Hayward Company, The, New York City.

HOPPERS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

IRON SULPHATE
Tennessee Corporation, Atlanta, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City.

LACING—Belt
Sackett & Sons Co., The A. J., Baltimore, Md.

LIMESTONE
American Agricultural Chemical Co., New York City.
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Wellmann, William E., Baltimore, Md.

LOADERS—Car and Wagon, for Fertilizers
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Coal and Ash Handling
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Elevating and Conveying
Atlanta Utility Works, East Point, Ga.
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
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MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Power Transmission
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Pumping
Atlanta Utility Works, East Point, Ga.

MACHINERY—Tankage and Fish Scrap
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MAGNESIA
California Chemical Co., New York City.

MAGNETS
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MANGANESE SULPHATE AND CARBONATE
Tennessee Corporation, Atlanta, Ga.

MANGANESE SULPHATE
Tennessee Corportion, Atlanta, Ga.

MIXERS
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

NITRATE OF SODA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Chilean Nitrate Sales Corp., New York City.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

NITRATE OVENS AND APPARATUS
Chemical Construction Corp., New York City.

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Smith-Rowland Co., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

NOZZLES—Spray
Monarch Mfg. Works, Inc., Philadelphia, Pa.

PACKING—For Acid Towers
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Chemical Construction Corp., New York City.

PANS AND POTS
Stedman's Foundry and Mach. Works, Aurora, Ind.

PHOSPHATE MINING PLANTS
Chemical Construction Corp., New York City.

PHOSPHATE ROCK
American Agricultural Chemical Co., New York City.
American Cyanamid Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Charleston Mining Co., Inc., Richmond, Va.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Jett, Joseph C., Norfolk, Va.
Ruhm, H. D., Mount Pleasant, Tenn.
Schmaltz, Jos. H., Chicago, Ill.
Southern Phosphate Corp., Baltimore, Md.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

PIPES—Chemical Stoneware
Chemical Construction Corp., New York City.

PIPES—Wooden
Stedman's Foundry and Mach. Works, Aurora, Ind.

PLANT CONSTRUCTION—Fertilizer and Acid
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Synthetic Nitrogen Products Co., New York City.
Taylor, Henry L., Wilmington, Del.
Wellmann, William E., Baltimore, Md.

POTASH SALTS—Manufacturers and Importers
American Potash and Chem. Corp., New York City.
Potash Co. of America, Baltimore, Md.
United States Potash Co., New York City.

PULLEYS AND HANGERS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

PUMPS—Acid-Resisting
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Jett, Joseph C., Norfolk, Va.
Wellmann, William E., Baltimore, Md.

QUARTZ
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

RINGS—Sulphuric Acid Tower
Chemical Construction Corp., New York City.

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ROUGH AMMONIATES
Bradley & Baker, New York City.
Schmaltz, Jos. H., Chicago, Ill.
Wellmann, William E., Baltimore, Md.

SCALES—Including Automatic Bagging
Atlanta Utility Works, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SCRAPERS—Drag
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.

SCREENS
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

SEPARATORS—Including Vibrating
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

SEPARATORS—Magnetic
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SHAFTING
Atlanta Utility Works, East Point, Ga.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SHOVELS—Power
Link-Belt Company, Philadelphia, Chicago.
Link-Belt Speeder Corp., Chicago, Ill. and Cedar Rapids, Iowa.
Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SPROCKET WHEELS (See Chains and Sprockets)

STACKS
Sackett & Sons Co., The A. J., Baltimore, Md.

SULPHATE OF AMMONIA
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Barrett Company, The, New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
Hydrocarbon Products Co., New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Snythetic Nitrogen Products Co., New York City.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

SULPHUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Freeport Sulphur Co., New York City.
Texas Gulf Sulphur Co., New York City.

SULPHURIC ACID
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.

SULPHURIC ACID—Continued
Bradley & Baker, New York City.
Huber & Company, New York City.
Jett, Joseph C., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
U. S. Phosphoric Products Corp., New York City.
Wellmann, William E., Baltimore, Md.

SUPERPHOSPHATE
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
Huber & Company, New York City.
International Agricultural Corp., New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Taylor, Henry L., Wilmington, N. C.
U. S. Phosphoric Products Corp., New York City.
Wellmann, William E., Baltimore, Md.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
International Agricultural Corp., New York City.
U. S. Phosphoric Products Corp., New York City.

SYPHONS—For Acid
Monarch Mfg. Works, Inc., Philadelphia, Pa.

TALLOW AND GREASE
American Agricultural Chemical Co., New York City.

TANKAGE
American Agricultural Chemical Co., New York City.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City.
Bradley & Baker, New York City.
International Agricultural Corp., New York City.
Jett, Joseph C., Norfolk, Va.
Schmaltz, Jos. H., Chicago, Ill.
Smith-Rowland Co., Norfolk, Va.
Taylor, Henry L., Wilmington, N. C.
Wellmann, William E., Baltimore, Md.

TANKAGE—Garbage
Huber & Company, New York City.

TANKS
Sackett & Sons Co., The A. J., Baltimore, Md.

TILE—Acid-Proof
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

TOWERS—Acid and Absorption
Chemical Construction Corp., New York City.
Fairlie, Andrew M., Atlanta, Ga.

UNLOADERS—Car and Boat
Hayward Company, The, New York City.
Link-Belt Company, Philadelphia, Chicago.
Sackett & Sons Co., The A. J., Baltimore, Md.

UREA
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Snythetic Nitrogen Products Co., New York City.

UREA-AMMONIA LIQUOR
Du Pont de Nemours & Co., E. I., Wilmington, Del.

VALVES—Acid-Resisting
Atlanta Utility Works, East Point, Ga.
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

WHEELBARROWS (See Carts)

ZINC SULPHATE
Tennessee Corporation, Atlanta, Ga.

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